Bank Loan Covenants and Accrual Quality

Abstract

We examine whether financial covenants in loan contracts motivate banks to monitor borrowers' financial reporting practices and result in a higher quality of reported accruals. We document that, relative to loans without financial covenants, loans with financial covenants lead to a significant improvement in accrual quality measured by the extent to which accruals can be mapped into cash flows. The effect of loan covenants on accrual quality is stronger when external monitoring by non-bank stakeholders (i.e., institutional investors and financial analysts) is weaker. Furthermore, initiations of bank loans with financial covenants are related to subsequent improvements in analysts' information environment. The evidence supports the view that bank monitoring improves accounting quality.

Keywords: Accrual quality, accounting quality, bank loans, loan covenants, bank monitoring
JEL Classification: M41

1. Introduction

Corporate finance theories state that bank lenders are delegated monitors of firm performance due to their stake at risk in the firm and their information advantage (Diamond, 1984; Fama, 1985). Consistent with the theory, a number of empirical studies have documented that bank monitoring affects borrowers' CEO successions (Marshall, McCann and McColgan, 2014), CEO risk taking incentives (Saunders and Song, 2018), dividend policies (Low et al., 2001), and investments (Nini, Smith and Sufi, 2009). However, much less is known about whether banking monitoring affects the quality of borrowers' accounting information that has been widely used in loan contracts.[1] One exception is Ahn and Choi (2009) who find a cross-sectional association between earnings quality and loan amount, loan maturity and the number of lenders, consistent with banking monitoring improving earnings quality.[2] However, Bharath, Sunder, and Sunder (2008) interpret the same cross-sectional association as suggesting that better earning quality results in better loan terms. Therefore, clear evidence on the effect of bank monitoring on accrual quality is still lacking in the literature.

Banks have strong incentives to closely monitor firms' financial reporting practices because loan contracts contain financial covenants that are often based on reported accounting numbers. To ensure financial covenants work effectively as "trip wires" and provide timely warnings to banks, the accounting numbers underlying the financial covenants must be free from manipulations and truthfully reflect borrowers'

[1] See Armstrong, Guay and Weber (2010) for a review of literature on accounting information and debt contracting.

[2] Another exception is Jha, Shankar, and Prakash (2015) who use data from India and find a positive association between the absolute value of discretional accruals (a measure of earnings quality) and the number of banks and bank loans as a percentage of total debt. Their results on the number of lenders are contradictory to those in Ahn and Choi (2009). Jha et al. acknowledge that institutional differences may prevent their results from being generalizable to other markets.

performance and risk. Indeed, accounting researchers argue and find that, since debtholders are more sensitive to downside risk, debtholders demand borrowers have conservative financial reporting that reflects bad news in a more timely manner (Watts, 2003; Ball, Robin, and Sadka, 2008; Nikolaev, 2010). Therefore, bank monitoring should improve the quality of reported accounting numbers.

In this study, we aim to provide direct evidence on whether the initiations of bank loans with financial covenants lead to improvement in the quality of reported accruals. To shed light on the direction of causality, we adopt an event study design and focus on the *changes* in borrowers' accrual quality in the quarters after the bank loan initiations. While accrual quality before loan initiations could affect loan decisions, as suggested by Bharath et al. (2008), the changes in borrowers' accrual quality following loan initiations are likely to be driven by bank monitoring. Unlike prior studies that measure earnings quality by discretional accruals estimated from various variations of Jones' model (1991), we follow Dechow and Dichev (2002) to use the mapping between accruals and cash flows to measure accrual quality for two reasons. First, the estimated discretional accruals have been shown to be extremely noisy and have low power to detect accrual manipulations.[3] Second, banks focus more on cash flows, and the extent to which accruals can be translated into cash flow is likely to be a focus of banks' monitoring.

Using data from Dealscan, we identify a sample of public firms that obtain bank loans during the period from 1988 to 2012. We focus on the comparison

[3] For example, Jackson (2017) shows that discretional accruals estimated from cross-sectional Jones' models do not have much association with accounting frauds identified by Securities and Exchanges Commissions. As an illustration, the estimated discretional accruals for Enron during its fraud years were negative and large in magnitude, contradictory to the upward earnings manipulations by Enron in those years.

between loans with and without financial covenants.[4] We expect that banks have a stronger incentive to monitor borrowers' financial reporting practice and accrual quality when the loans have financial covenants. Consequently, we expect to find a larger improvement in borrowers' accrual quality after the initiation of bank loans with financial covenants, relative to the initiation of loans without financial covenants. The empirical results are consistent with our expectation. We find that in the eight quarters following the initiations of bank loans, the existence and the number of financial covenants are both positively and statistically significantly associated with the improvement in accrual quality. This result is obtained after we control for contemporaneous changes in firm characteristics such as firm size, cash flow volatility, operating cycles, market-to-book ratios and profitability.

We proceed to examine the cross-sectional variations of the monitoring role of banks. We first consider the structure of loan syndicates. In a loan syndicate the lead banks are often delegated to monitor the borrower's performance, and we expect the monitoring incentive of lead banks increases with their stake in the loan. Consistent with this view, we find the effect of loan covenants on borrowers' accrual quality is stronger when lead banks retain a larger portion of loans. Furthermore, we examine whether bank monitoring is a substitute for monitoring by other stakeholders. We find that the effect of loan covenants on borrowers' accrual quality is stronger for borrowers with smaller size, lower institutional ownership and a smaller number of analysts following, suggesting that bank monitoring plays a more important role when monitoring by other stakeholders is weaker.

[4] We do not compare firms with loans to firms without loans, because accruals are likely to be affected by external financing (Shan, Taylor, and Walter, 2009) and thus it is difficult to differentiate the effect of bank monitoring from the effect of debt issuance per se based on comparing firms with and without loans.

Finally, we investigate whether the improvement in accrual quality benefits other users of borrowers' financial information such as financial analysts. The results show that financial covenants are positively associated with analysts' forecast accuracy and negatively associated with analysts' forecast dispersions. Using the measures of the precision of analysts' information developed by Barron et al. (1998), we show that financial covenants are positively related to precision of analysts' public and private information. Overall, the results suggest that improved accrual quality of borrowers allows financial analysts to have more precise information and issue more accurate earnings forecasts.

Our study is related to but distinct from prior studies on the 'debt covenant hypothesis' that proposes that debt covenants give incentives to managers to manage accounting numbers to avoid covenant violations.[5] The hypothesis, while being consistent with positive accounting theory (Watts and Zimmerman, 1990), seems to overlook the monitoring role of debtholders. Most empirical tests on this hypothesis examine the earnings management measured by discretional accruals around actual violations of debt covenants. However, covenant violations also result in interventions and intensified monitoring by banks and other debtholders, making it unclear whether managers still desire to engage in earnings management under the close watch of debtholders. Consequently, the empirical evidence on the 'debt covenant hypothesis' remains largely mixed. Our study differs from these studies in several ways. First, we focus on the initiations of bank loans and examine the changes in accrual quality after the loan initiations. Second, we compare borrowers of bank loans with and without financial covenants, rather than firms with and without covenant violations. Third, we

[5] See, for example, Healy and Palepu (1990), DeAngelo et al. (1994), DeFond and Jiambalvo (1994), Sweeney (1994), Dichev and Skinner (2002), Jaggi and Lee (2002), Stanley and Sharma (2011) and Jha (2013).

choose to use the mapping between accruals and cash flows to measure accrual quality, rather than noisy discretional accruals.

Our study is also related to Bharath et al. (2008) and Ahn and Choi (2009). While both papers find a cross-sectional association between borrowers' earnings quality and loan terms such as loan amount and maturity, they have totally different interpretations. Ahn and Choi (2009) suggest that a larger loan amount and longer loan maturity capture the intensity of bank monitoring and thus the association implies that bank monitoring improves earnings quality. Bharath et al. (2008) interpret the association as suggesting that banks reward higher accounting quality with better loan terms, consistent with the argument that accounting quality affects cost of debt. Because both studies focus on the cross-sectional associations, it is difficult to establish the direction of causality and differentiate between these two competing explanations. Our study adopts an event study approach and examines the changes in accrual quality following the loan initiations. After controlling for other contemporaneous changes, we show that loans with financial covenants lead to larger improvement in accrual quality. The results from changes in accrual quality after loan initiations allow us to address the endogeneity concerns and draw the conclusion that bank monitoring improves accrual quality.

Our study contributes to the literature in two ways. First, we show that bank monitoring could improve accounting quality. Despite a large number of theoretical studies on bank monitoring of borrowers' behavior, there is limited evidence on the effect of bank monitoring on financial reporting. By examining the changes in accrual quality after loan initiations, our study provides direct evidence that bank monitoring leads to improved accrual quality. Furthermore, we show that the effect of bank

monitoring is stronger when other stakeholders' monitoring is weaker, suggesting a substitute effect between external monitors.

Second, we add to the literature on the relation between corporate debt and properties of accounting numbers. Most of the studies in this literature argue that high quality earnings and conservative accounting practices facilitate debt contracting (e.g., Watts, 2003; Ball et al., 2008; Bharath et al., 2008). In particular, Nikolaev (2010) shows that covenants in public debt contracts are positively associated with the degree of timely loss recognition, implying that bondholders demand conservative accounting for the covenants *before* bond issuance. Our evidence suggests that *after* the initiation of debt contracts, the monitoring by banks could further constrain managers' opportunistic behavior in financial reporting behavior and improve accrual quality. Our study thus enriches the literature by documenting the effect of banks on accrual quality after loan initiations.

The remainder of the paper proceeds as follows. Section 2 reviews related studies and develops the hypotheses. We describe the data, sample and research design in Section 3, report empirical results in Section 4, and conclude in Section 5.

2. Related Studies and Hypothesis Development

It has been well accepted in banking and finance literature that banks are effective monitors of borrowers' performance. Relative to other stakeholders, banks have stronger incentives to monitor borrowers due to the asymmetric payoffs to their investments that have limited upside potentials but bear all the downside risk. Diamond (1984) proposes that banks have lower cost of delegation and thus are more

likely to be the entrusted monitors. Furthermore, Fama (1985) shows that banks can have direct access to borrowers' operations and information systems, which allows banks to have an information advantage relative to other financial intermediaries. While prior studies have documented that banks can intervene when firms violate debt covenants (e.g., Chava and Roberts, 2008; Roberts and Sufi, 2009; Nini, Smith, and Sufi, 2009, 2012), there is limited evidence on whether bank monitoring plays a role when borrowers do not breach loan covenants.

One related stream of research examines the association between borrowers' accounting quality and banks' lending decisions at the inception of loans. One view is that better accounting quality allows banks to have a more accurate forecast of a borrower's future performance and thus a more precise estimate of a borrower's default risk. As a result, banks offer better loan terms to borrowers with higher accounting quality. Consistent with this view, Bharath et al. (2008) find that firms with smaller discretional accruals have a lower loan spread, a larger loan amount, and a longer loan maturity. Another view in the accounting literature focuses on the asymmetric payoff of banks and argues that banks demand borrowers have a conservative financial reporting system that reflects expected losses on a more timely manner than expected gains (Watts, 2003). Conservative accounting implies that loan covenants that are based on reported accounting numbers can serve as effective 'trip wires' that will be triggered and allow banks the opportunity to step in and intervene when a firm's performance start to deteriorate. The evidence from Nikolaev (2010) shows that financial covenants in public debt contracts are positively related to the degree of asymmetric timely loss recognition, consistent with conservative accounting that facilitates the use of accounting numbers in loan contracts. Overall, this stream of

literature shows that banks do carefully consider the quality of borrowers' financial reporting *before* loan initiations, consistent with banks' credit control requirements.

Borrowers, however, have incentives to manage accounting numbers after loan initiations. One incentive is to meet the loan covenants that are based on accounting numbers. Prior studies have documented that covenant violations can result in many negative events such as loan renegotiation, increased loan cost, or even early termination of the loan (e.g., Beneish and Press, 1993). To avoid these negative consequences, borrowers have strong incentives to avoid debt covenants if they are able to do so at a cost lower than the expected benefits. Accounting literature has proposed and tested this 'debt covenant hypothesis' that states that borrowers manage accounting numbers to avoid debt covenant violations. Most empirical tests, however, rely on a sample of firms that report debt covenants in their annual reports and examine the estimated discretional accruals for the sample firms in the periods around the violations. Because firms can avoid reporting covenant violation by renegotiating with the banks, the reported violations are often serious ones that cannot be 'cured' before the report date. Focusing on this sample of firms for evidence of earnings management is problematic because, while these firms do have a strong incentive to manage earnings, the violations also suggest that banks will intervene and take over control of the borrowers. Bank intervention implies intensified monitoring, and thus it is unclear if borrowers still desire to manage earnings when they are under close watch by the banks.

The empirical evidence on the 'debt covenant hypothesis' is mixed. While DeFond and Jiambalvo (1994) and Sweeney (1994) find evidence of accruals management, Healy and Palepu (1990) and DeAngelo et al. (1994) do not find support for the hypothesis. More recently, Jha (2013) finds borrowers manage earnings

upward before covenant violations and then manage earnings downward after the violations. One issue with these studies is they rely on estimated discretional accruals from various versions of Jones' model. Jackson (2017) demonstrates that the estimated discretional accruals have little power in detecting earnings management, making it even harder to draw any conclusion from the above studies.

In contrast, Dichev and Skinner (2002) examine the distribution of two financial ratios used in loan covenants. They find an unusually small number of observations just below covenant thresholds and an unusually large number of observations at or just above covenant thresholds. Although the evidence seems to be consistent with the 'debt covenant hypothesis' that borrowers manage accounting numbers to shift the financial ratios to the level just above the covenant thresholds, Dichev and Skinner (2002) acknowledge that an alternative explanation is that banks ex ante set the covenant thresholds just below the actual value of the financial ratios. Further, the distribution of the ratios does not provide evidence on how borrowers manage accounting numbers to meet the thresholds.

Ahn and Choi (2009) investigate whether bank monitoring constrains borrowers' earnings management. They find that borrowers' discretional accruals are negatively associated with the loan amount, loan maturity and the number of lenders. They interpret the evidence as suggesting that bank monitoring reduces managers' opportunistic behavior in financial reporting. Their evidence is consistent with the findings in Bharath et al. (2008). However, Bharath et al. (2008) interpret the evidence as suggesting that banks reward borrowers' higher accounting quality with better loan terms. Because the evidence in both studies is only based on the cross-sectional association, endogeneity issues make it hard to differentiate between these two competing interpretations.

Despite the lack of evidence, banks do have incentives to monitor borrowers' financial reporting practices after loan initiations for several reasons. First, banks need to monitor borrowers' operations to assess the risk and performance of the loans, and financial reporting is an important source of information for banks. Although banks may have access to private information not contained in financial statements, information in financial statements can help banks to verify their private information and better assess the risk (Bharath et al., 2008). Second, as a result of agency conflicts, borrowers' managers may divert firms' resources to either themselves or to shareholders at the cost of debtholders. There is an incentive for borrowers' managers to manipulate reported accounting numbers to camouflage such agency problems (Leuz et al., 2003). Therefore, banks also need to monitor borrowers' financial reporting for warnings signs of agency conflicts that either decrease borrowers' future cash flows or increase borrowers' risk.

Third, loan covenants, particularly financial covenants, are often based on reported accounting numbers.[6] The covenants provide banks with legal rights to intervene and take control of borrowers (Nini, Smith, and Sufi, 2009, 2012). As the 'debt covenant hypothesis' states, managers may opportunistically manage accounting numbers such as accruals to meet the covenant requirements, which makes the covenant less effective as a 'trip wire' to alert banks of the borrowers' deteriorating performance and increasing risk. Thus banks would continue to demand conservative and high quality financial reporting after loan initiations to ensure financial covenants are observed as expected.

[6] One may argue that banks may not monitor reported accounting numbers because loan contracts can be written on modified accounting numbers that are different from those reported in financial statements. Beatty, Weber, and Yu (2008) show that (1) a substantial number of loan contracts do not make any modification to reported accounting numbers; and (2) the accounting modifications in loan contracts are also driven by banks' demand for conservative financial reporting and concerns for agency problems.

In this study, we focus on banks' incentives to monitor borrowers' financial reporting due to the existence of financial covenants, while assuming the other incentives will be held constant. In particular, we compare the borrowers of loans with financial covenants with borrowers of loans without covenants. We expect that the existence of financial covenants indicates that banks will monitor more closely and exercise more influence on borrowers' financial reporting practices. As a result of increased monitoring, borrowers of loans with financial covenants are more likely to constrain their opportunistic financial reporting behavior such as accrual management that is used to overstate earnings or assets. This indicates that these borrowers are more likely to experience a larger improvement in their accrual quality after the loan initiations, relative to borrowers of loans without financial covenants. This discussion leads to our first hypothesis stated in the alternative form as follows:

H1: Borrowers of bank loans with financial covenants experience a larger improvement in accrual quality after loan initiations than borrowers of loans without financial covenants.

We note that this hypothesis focuses on the comparison between borrowers of loans with and without financial covenants to shed light on the evidence of bank monitoring improving accounting quality. An alternative way to provide evidence is to compare firms with bank loans to firms without bank loans, assuming firms with banks loans receive no monitoring from banks. While intuitive, this alternative design choice has the difficulty that bank loans, as an important external financing source, could mechanically affect the accrual generating process and result in increased accruals when borrowers invest the cash from the loans to increase their assets (Shan et al., 2009). Therefore, a comparison between firms with and without bank loans may not be able to provide clean evidence on the monitoring role of banks. In contrast,

when we focus on the comparison between borrowers of loans with and without financial covenants, these borrowers all have loans and their accruals are all affected by the bank loans, which allows us to control for the effect of external financing on accruals. This comparison should thus provide cleaner evidence on the banks' monitoring role.

Banks are not the only stakeholders that can monitor borrowers' performance and accounting practices. The literature has provided evidence that other financial intermediaries can also perform a monitoring role and influence firms' financial reporting. For example, Yu (2008) shows that financial analysts, a group of sophisticated users of accounting information, are positively related to firms' accounting quality, suggesting analysts' monitoring helps constrain firms' earnings management and leads to better accounting quality. Matsumoto (2002) finds that firms with a higher level of institutional ownership are less likely to have income-increasing accruals to meet or beat earning targets. Firm ownership by long-term institutional investors is also related to less accruals management and real activity earnings management (Bushee, 1998; Chung et al., 2002; Koh, 2007). Taken together, these studies suggest that financial analysts and institutional investors can perform a monitoring role and help improve firms' accounting quality. When multiple monitors are present, it is possible that they substitute for each other's monitoring efforts, as monitoring is costly to each of the monitors. In particular, when external monitoring by analysts and institutional investors is weak, banks may find it necessary to exercise more monitoring and closely watch borrowers' financial reporting practices. In contrast, when borrowers' accounting quality is sufficiently high due to intense scrutiny by analysts and institutional investors, banks' monitoring has a weaker incremental effect on borrowers' accounting quality. We thus expect that banks'

monitoring role to be stronger when borrowers have weaker external monitoring by financial analysts and institutional investors. This leads to our second hypothesis stated in alternative form as follows:

H2: The effect of financial covenants on accrual quality will be stronger when borrowers have a smaller number of financial analysts following and a lower level of institutional ownership.

Banks' incentive to monitor borrowers also varies with their stake in the loan syndicate, with larger stakes likely motivating banks to exercise more effort in monitoring the borrowers. Lead banks are often entrusted as the principal monitor of borrowers' performance and risk, with other participating banks and institutions performing a secondary role in monitoring. We thus focus on the share of the loan held by the lead bank in the loan syndicate. If the lead bank retains a larger share of the loan, we expect the lead bank will have more incentive to monitor a borrower's financial reporting. This leads to our third hypothesis stated in alternative form as follows:

H3: The effect of financial covenants on accrual quality will be stronger when lead banks have a larger share of the loan.

3. Data, Sample and Research Design

3.1 Data and sample

Our sample selection starts with loan data for US borrowers in Dealscan from 1988 to 2012. Following Sufi (2007) and Ball et al. (2008), we perform our analysis at the deal level, and treat each loan deal as a separate observation or event. If there is more than one loan to a firm in a quarter, we only retain the loan with the most financial covenants. We then obtain accounting data of borrowers from Compustat

and stock returns from CRSP. After requiring the sample firms to have non-missing data for the variables used in the multivariate analysis, our final sample contains 7,107 loans.

3.2 Measures of accrual quality

To measure accrual quality, we employ the measure developed by Dechow and Dichev (2002) and based on the mapping between accruals and cash flows. Because accrual accounting shifts the timing of recognition of cash flows, high quality accruals are more likely to be translated into cash flows in adjacent accounting periods. Banks usually focus on cash flows, and thus bank monitoring of financial reporting should lead to higher accrual quality or the larger probability that accruals (such as accounts receivables) can be transformed into cash flows. Specifically, we estimate the following regressions using quarterly accounting data:

$$\Delta WCA_{i,q} = \beta_0 + \beta_1 OCF_{i,q-1} + \beta_2 OCF_{i,q} + \beta_3 OCF_{i,q+1} + \varepsilon_{i,t} \quad (1)$$

where $WCA_{i,q}$ is the working capital accruals for firm i in quarter q, calculated as the change in operating noncash working capital. *OCF* is cash flow from operations in quarter q-1, q and q+1. All the variables are scaled by the total assets at the end of quarter t. The R^2 from the regression captures the extent to which the current quarter's working capital accruals are related to cash flows in adjacent quarters. A larger R^2 indicates a stronger association between accruals and cash flows, and thus higher accrual quality.

For each loan in the sample, we first estimate Equation 1 using the borrowers' accounting data in the eight quarters prior to the quarter in which loans are initiated. The R^2 from this regression is termed as *AQ_prior*. We then re-estimate Equation 1 using the same borrowers' accounting data in the eight quarters after the quarter in

which loans are initiated, and term the R^2 from this regression as *AQ_post*.[7] Finally, we calculate changes in accrual quality after loan initiation such that ΔAQ = *AQ_post* - *AQ_prior*. We use ΔAQ to measure the extent to which accrual quality has improved after the loan initiation.

3.3 Regression models

To test our hypothesis, we estimate the following cross-sectional regressions:

$$\Delta AQ = \beta_0 + \beta_1 FC + \beta_2 \Delta SIZE + \beta_3 \Delta SALESVOL + \beta_4 \Delta OCFVOL + \beta_5 \Delta MB + \beta_6 \Delta NegEarn + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + \varepsilon \quad (2)$$

where ΔAQ is the change in accrual quality around the loan initiations, as defined above. The variable of interest is *FC*, an indicator variable equal to 1 for borrowers whose loans contain financial covenants, and 0 for borrowers whose loans do not have financial covenants. Our H1 predicts that the coefficient of *FC* is positive, or $\beta_1 > 0$, suggesting borrowers of loans with financial covenants experience a larger improvement in accrual quality. In a robustness test, we also use the number of financial covenants to examine if more financial covenants are related to larger improvements in accrual quality. Specifically, we define *FC_N* as the natural log of the sum of 1 and the number of financial covenants. When replacing *FC* with *FC_N* in Equation 2, we expect the coefficient of *FC_N* to be positive as well, implying more financial covenants lead to increased bank monitoring and a larger improvement in accrual quality.

To test H2, we partition the sample based on the median of the number of financial analysts following to form two subsamples. We also partition the sample

[7] The quarter in which the loan is initiated is not used for either regression to allow a transition period.

based on the median of the level of institutional ownership of the borrowers. We then estimate Equation 2 for each subsample, and compare the coefficient of *FC*. H2 predicts that the coefficient will be larger for the subsample with below-median analysts following and for the subsample with below-median institutional ownership. Similarly, to test H3, we partition the sample based on the median of the proportion of loans retained by the lead bank, and estimate Equation 2 for each subsample. We expect *FC* to have a larger coefficient in the subsample where lead banks keep a larger portion of loans in the loan syndicate.

We follow Francis et al. (2005) to include a number of control variables in Equation 2 that are likely to be related to accrual quality. *SIZE* is the natural logarithm of a firm's total assets. *OPCYCLE* is the natural log of the sum of the firm's days accounts receivable and days inventory. *SALESVOL* is the standard deviation of the firm's rolling eight-quarter sales scaled by the ending total assets. *OCFVOL* is the standard deviation of the firm's rolling eight-quarter cash flow from operations scaled by the ending total assets. *MB* is the ratio of market value of equity to book value of equity. *NegEarn* is the proportion of losses over the prior eight quarters. Since we focus on the changes in the accrual quality, we also calculate the changes in these control variables and include changes in the regressions. Finally, we control for industry- and year-fixed effects, and adjust standard errors from regressions for the clustering effect at the firm level.

4. Empirical Results

4.1 Effect of financial covenants on accrual quality

To test H1, we start with a univariate analysis by dividing loans into two groups based on whether they have financial covenants and then compare the changes

in accrual quality after loan initiations for borrowers of loans with and without financial covenants. Table 1 reports the descriptive statistics for the borrowers in these two groups and tests whether they have equal mean and median of the variables. The result shows that, on average, borrowers of loans with financial covenants experience an increase in accrual quality (ΔAQ = 0.001), while borrowers of loans without financial covenants experience a decline in accrual quality (ΔAQ = -0.018).[8] The difference in the mean of ΔAQ is statistically significant. The evidence is consistent with H1 that borrowers of loans with financial covenants have a larger improvement in accrual quality after loan initiations. Regarding changes in firm characteristics, the borrowers of loans with financial covenants have a larger increase in total assets ($\Delta SIZE$ = 0.111) after loan initiations. The changes in other firm characteristics, however, do not differ significantly between the two groups of borrowers.

[Insert Table 1 about here]

Table 2 reports the Pearson correlation coefficients between the variables used in the multivariate analyses. Consistent with the result in Table 1, *FC* is positively related to ΔAQ. Furthermore, *FC_N* is also positively related to ΔAQ, suggesting that the number of financial covenants is positively associated with changes in accrual quality. These correlations support H1 that financial covenants motivate banks to exercise more monitoring of borrowers' financial reporting, which improves accrual quality. ΔAQ is also associated with $\Delta OCFVOL$ and ΔMB, both of which do not have significant correlations with either *FC* or *FC_N*. The correlation coefficients between control variables (changes in firm characteristics) are generally small in magnitude,

[8] The decline may be partially driven by an overall decrease in the association between accruals and cash flows in US public firms over the past 50 years, as documented by Bushman et al. (2016).

suggesting multicollinearity may not be a serious concern for the multivariate regressions.

[Insert Table 2 about here]

Table 3 reports the results from multivariate regressions using ΔAQ as the dependent variable. In Models 1 and 3, we include only the variables of interest, *FC* and *FC_N*, and industry- and year-fixed effects. In Models 2 and 4, we add control variables for changes in firm characteristics. In all the models, the variables of interest have positive and statistically significant coefficients, suggesting the financial covenants lead to a larger improvement in accrual quality. The estimated coefficient of *FC* in Model 2 is 0.027 (p-value = 0.002), suggesting that the R^2 from regressions of accruals on adjacent cash flows is 2.7 percentage points larger for borrowers of loans with financial covenants. Given the average change in R^2 for the sample firms is only -0.009, an improvement of 2.7 percentage points is economically significant as well. This result provides strong support to H1 that intensified bank monitoring associated with financial covenants results in a larger improvement in accrual quality of borrowers of loans with financial covenants.

[Insert Table 3 about here]

Regarding the control variables, $\Delta OCFVOL$ is negatively associated with ΔAQ, suggesting an increase in cash flow volatility results in weaker mapping between cash flows and accruals. ΔMB is positively related to ΔAQ. Other control variables do not have statistically significant coefficients, which may not be surprising as we examine changes in these variables and firm characteristics tend to be quite stable and usually do not change dramatically over time.

4.2 Effect of external monitoring and loan structure

To test H2 that predicts that the effect of financial covenants on accrual quality will be stronger when monitoring by other stakeholders is weaker, we divide the sample into subsamples based on the strength of external monitoring by institutional investors and financial analysts. We then estimate Equation 2 separately for each subsample and compare the coefficients of *FC*. Table 4 reports the results.

In Models 1 and 2, we divide the sample by the median of institutional ownership in borrowing firms. The result shows that in the subsample where borrowers have a low institutional ownership, *FC* has a positive and statistically significant coefficient (coefficient = 0.033, p-value = 0.035). But in the subsample of borrowers with a high institutional ownership, the coefficient of *FC* becomes statistically insignificant. The evidence supports H2 that when institutional ownership is low and external monitoring by institutional investors is weak, bank monitoring has a larger impact on accrual quality. Similarly, we find that *FC* has a positively and statistically significant coefficient (coefficient = 0.043, p-value = 0.002) in Model 3 where borrowers receive a low level of analyst coverage. But the coefficient becomes insignificant in Model 4 where borrowers have more analyst coverage. The evidence suggests when analyst coverage is low and analyst monitoring is weaker, bank monitoring is more important in improving borrowers' accrual quality. Overall, the results in Table 4 support H2.

[Insert Table 4 about here]

H3 predicts that bank monitoring will be stronger when lead banks retain a larger share of the loan. To test this prediction, we divide the sample into two subsamples based on the median of the proportion of loans held by lead banks. Table

5 reports the results from regressions estimating Equation 2 separately for the two subsamples. We find that *FC* has a coefficient of 0.044 (p-value = 0.071) in Model 1 where lead banks hold a smaller share of the loans. The coefficient of *FC* increases to 0.079 (p-value = 0.001) in Model 2 where lead banks retain a larger shares of loans. The evidence suggests that the effect of financial covenants on accrual quality is stronger when lead banks hold a larger share of the loan and have more incentives to monitor borrowers' financial reporting practices related to financial covenants. Therefore, the results in Table 5 are consistent with the prediction of H3.

[Insert Table 5 about here]

4.3 Evidence from analysts' information environment

We have documented empirical evidence supporting our main hypothesis that bank monitoring improves accrual quality. In this subsection, we provide some supporting evidence based on the properties of analysts' forecasts. The rationale is that if loan covenants and bank monitoring improves accounting quality, financial analysts as a group of sophisticated users of accounting information should benefit from the improved accrual quality and have a better information environment. This rationale predicts that after loan initiations, analysts' earnings forecasts will become more accurate and less dispersed for borrowers of loans with financial covenants, compared to their forecasts for borrowers of loans without financial covenants.

To test this prediction, we examine changes in analysts' forecast accuracy and forecast dispersion after loan initiations. Specifically, for each loan, we select a sample of analysts' forecasts for borrowers' quarterly earnings. Following the literature, we only retain the last forecasts of each analyst for each firm-quarter. For each quarter, we calculate forecast accuracy as -1 multiplied by the absolute value of

differences between actual earnings per share and the median of forecast earnings per share, deflated by share prices at the beginning of the quarter. We compute forecast dispersion as the standard deviation of analysts' forecasts in the quarter, deflated by share prices at the beginning of the year. Then we calculate the mean forecast accuracy and mean forecast dispersion in the eight quarters prior to the loan initiation, as well as the mean forecast accuracy and dispersion in the eight quarters after the loan initiation. The changes in forecast accuracy ($\Delta Accuracy$) and forecast dispersion ($\Delta Dispersion$) are thus computed as the mean in the post-loan period minus the mean in the pre-loan period.

Furthermore, we follow the method developed by Barron et al. (1998) to calculate empirical measures of the precision of analysts' common and private information. Based on a set of assumptions, Barron et al. (1998) show that researchers can estimate the precision of analysts' common information (h) and private information (s) using observable analyst forecasts in the following way:

$$h = \left(SE - \frac{D}{N} \right) \Big/ \left[\left(SE - \frac{D}{N} \right) + D \right] \tag{3}$$

$$s = D \Big/ \left[\left(SE - \frac{D}{N} \right) + D \right] \tag{4}$$

where SE is the square of the absolute difference between the actual earnings per share and the mean forecasts, D is the standard deviation of the forecasts, and N is the number of analysts issuing forecasts. A larger h or larger s indicates that analysts' common or private information is more precise. This approach has been used in a number of prior studies including Barron et al. (2008, 2017).

The estimation of the precision of analysts' private and common information requires the firm to have at least two analysts issuing the forecasts, which results in a more restrictive sample. Using quarterly forecasts, we estimate h and s for each quarter, and then compute the mean of h and s in the eight quarters prior to loan initiations, as well as their means in the eight quarters after loan initiations. Then we calculate the changes in h and s (Δh and Δs) using the mean in the post-loan period minus the mean in the pre-loan period.

To examine the effect of financial covenants on analysts' forecasts, we estimate the following multivariate regressions:

$$\Delta Accuracy\ (\Delta Dispersion, \Delta h, \Delta s) = \beta_0 + \beta_1 FC + controls + Year\ Fixed\ Effects\ + Industry\ Fixed\ Effects + \varepsilon \quad (5)$$

where dependent variables are $\Delta Accuracy$, $\Delta Dispersion$, Δh and Δs, respectively. The variable of interest is *FC*, and we expect its coefficient to be positive when $\Delta Accuracy$, Δh and Δs are the dependent variables, suggesting that financial covenants are related to a larger improvement in forecast accuracy and precision of analysts' information. We expect *FC* to have a negative coefficient when $\Delta Dispersion$ is the dependent variable, implying financial covenants are related to a larger decline in forecast dispersion after loan initiations.

We include a set of control variables that prior studies have shown to be related to analysts' forecasts (e.g., Hope, 2003; Dhaliwal et al., 2012). Specifically, we control for the number of analysts following (*Analysts*, the natural log of the number of analysts following the firm), earnings volatility (*VarEarn*, the standard deviation of actual earnings per share in the prior eight quarters), accounting losses (*Loss*, an indicator variable equal to 1 if the firm reports accounting losses in the

quarter, and 0 otherwise), and forecast horizon (*Horizon*, the number of days between the date of median forecast date and quarterly earnings announcement date). We include firm size (*SIZE*, the natural log of total assets) and market-to-book ratios (*MB*) to control for the general firm characteristics, in addition to year- and industry-fixed effects. Besides these common control variables for all the models, in models using Δ*Dispersion*, Δh and Δs as dependent variables, we also control for the magnitude of earning surprises (*Surprise*, the absolute value of the difference between actual earnings and median earnings forecast and deflated by the stock price at the beginning of the quarter). When examining the precision of analysts' information, we also control for forecast dispersion and *ROA*. To be consistent with the calculation of the dependent variables, we calculate and include in regressions the changes in these control variables using their mean in the pre-loan period minus the mean in the post-loan period.

Table 6 reports the results from regressions examining the effect of financial covenants on analysts' forecasts. As expected, we find that *FC* is positively related to Δ*Accuracy*, Δh and Δs (in Models 1, 3 and 4) and negatively related to Δ*Dispersion* (in Model 2), suggesting that analysts' forecasts become more accurate and less dispersed after loan initiation for borrowers of loans with financial covenants. Analysts' information for these borrowers also becomes more precise in the post-loan period. Overall, the evidence from analysts' forecasts corroborates our main results that financial covenants and associated banking monitoring help improve accrual quality.

[Insert Table 6 here]

4.4 Robustness tests

We conduct a number of additional tests to ensure our main results are robust to alternative explanations and alternative design choices.

First, our main variable of interest is the financial covenants and we argue that financial covenants motivate banks to exercise additional monitoring of borrowers' financial reporting. One concern is that other loan terms, such as loan amount and loan maturity, are also likely to be correlated with financial covenants and bank monitoring. Therefore, it is possible that our main results are driven by these loan terms rather than financial covenants. To address this concern, we include a number of loan terms as additional control variables including general covenants (*GC*, an indicator variable equal to 1 if the loan contract contains general covenants, and 0 otherwise), loan amount (*Amount*, the natural log of the amount of the loan), loan security (*Security*, an indicator variable equal to 1 if the loan requires collateral, and 0 otherwise), and loan maturity (*Maturity*, the log of the number of months between loan initiation and maturity date).

The results from regressions with these additional controls are reported in Models 1 and 2 in Table 7. We find that our main results remain unchanged after controlling for these loan terms, and financial covenants continue to be positively related to improvements in accrual quality. Interestingly, we find general covenants are not associated with changes in accrual quality, suggesting that general covenants, which are not based on accounting numbers, do not provide incentives for banks to monitor borrowers' financial reporting practices and improve borrowers' accrual quality. The contrast in the results from financial covenants and general covenants lends strong support to our hypothesis that financial covenants motivate banks to monitor borrowers' accounting quality.

[Insert Table 7 about here]

In our empirical tests, we include all the loans in the sample. One issue is that a borrower may have multiple loans in a short period of time and thus their pre-loan period for one loan may overlap with the post-loan period for another loan. To address this issue, we select a cleaner sample of loans requiring that a borrower has no other loans in the eight quarters before and eight quarters after the current loan. This essentially requires a borrower to have only one loan in a 16-quarter period and eliminates the possibility that a borrower has overlapping loan periods. The result from regressions using this smaller sample is reported in Model 3 in Table 7. *FC* continues to have a positive and statistically significant coefficient (coefficient = 0.029, p-value = 0.046), suggesting that our main results are not driven by the overlap between pre- and post-loan periods.

To measure accrual quality, we use the empirical measure developed by Dechow and Dichev (2002) and based on the mapping between accruals and cash flows. Although this measure has been widely used in the literature and we believe it captures banks' focus on cash flow, there are many other measures of accrual quality in the literature. One feature of high quality accruals is that accruals are more positively related to future earnings, since low quality accruals tend to reverse in the future and thus lead to lower earnings. To examine this alternative measure of accrual quality, we estimate the following regression for each firm:

$$ROA_{i,q+1} = \beta_0 + \beta_1 OCF_{i,q} + \beta_2 Accrual_{i,q} + \varepsilon_{i,t} \quad (6)$$

where *ROA* is the income before extraordinary items deflated by total assets, *OCF* is the operating cash flow deflated by total assets, and *Accrual* is income before extraordinary items minus operating cash flow, deflated by total assets. The

coefficient of *Accrual*, or β_2, captures the extent to which current accruals are related to future *ROA*. A larger β_2 indicate the accruals are of a higher quality. We estimate Equation 6 to obtain estimated β_2 using quarterly data in the eight quarters before and eight quarters after the loan initiation, and then compute the changes in β_2 around the loan initiation.

The result from the regression using changes in β_2 as the dependent variable is reported in Model 4 in Table 7. We find that *FC* has a positive and statistically significant coefficient, suggesting that financial covenants are positively related to improvements in accrual quality. Overall, the result shows that our main results are robust to this alternative measure of accrual quality.

5. Conclusions

We investigate whether bank monitoring constrains borrowers' opportunistic behavior in financial reporting and improves the quality of reported accounting numbers. Despite convincing arguments in corporate finance theory that banks are delegated and effective monitors (Diamond, 1984; Fama, 1985), there is limited evidence on the effect of bank monitoring on borrowers' financial reporting behavior. Ahn and Choi (2009) document that some loan terms are associated with measures of accounting quality, but Bharath et al. (2008) interpret the evidence as suggesting that better accounting quality is rewarded with more favourable loan terms. In this study, we use an event study approach and focus on the changes in accrual quality after loan initiations to examine the effect of bank monitoring on accrual quality. Furthermore, we focus on the comparison between loans with and without financial covenants to have a cleaner test.

Consistent with our hypothesis that financial covenants motivate banks to exercise more monitoring of borrowers' financial reporting behavior, we find that financial covenants are positively associated with improvements in accrual quality. The evidence remains robust after we control for a number of firm characteristics and loan terms, use alternative measures of accrual quality, and exclude overlapping loan periods. We also find that the effect of financial covenants on accrual quality is stronger when external monitoring by institutional investors and financial analysts is weaker, and when lead banks hold a larger share of the loan and thus have more incentives to monitor. Overall, our results support the hypothesis that bank monitoring improves accounting quality.

References

Ahn, S., Choi, W., 2009. The role of bank monitoring in corporate governance: Evidence from borrowers' earnings management behavior. *Journal of Banking & Finance* 33, 425–434.

Armstrong, C., Guay, W. R., Weber, J. P., 2010. The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics* 50, 179-234.

Ball, R., Robin, A., Sadka, G., 2008. Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies* 13, 168–205.Barron, O., Byard, D., Yu, Y., 2008. Earnings surprises that motivate analysts to reduce average forecast error. *The Accounting Review* 83, 303–325.

Barron, O., Byard, D., Yu, Y., 2017. Earnings announcement disclosure and changes in analysts' information. *Contemporary Accounting Research* 34, 343–373.

Barron, O., Kim, O., Lim, S., Stevens, D., 1998. Using analysts' forecasts to measure properties of analysts' information environment. *The Accounting Review* 73, 421–433.

Beatty, A., Weber, J., Yu, J., 2008. Conservatism and debt. *Journal of Accounting and Economics* 45, 154–174.

Beneish, M., Press, E., 1993. Costs of technical violation of accounting-based debt covenants. *The Accounting Review* 68, 233–257.

Bharath, S. T., Sunder, J., Sunder, S. V., 2008. Accounting quality and debt contracting. *The Accounting Review* 83, 1–28.

Bushee, B., 1998. The influence of institutional investors on myopic R&D investment behaviour. *The Accounting Review* 73 (3), 305–333.

Bushman, R., Lerman, A., Zhang, X. F., 2016. The changing landscape of accrual accounting. *Journal of Accounting Research* 54, 41–78.

Chava, S., Roberts, M. R., 2008. How does financing impact investment? The role of debt covenants. *Journal of Finance* 63, 2085–2121.

Chung, R., Firth, M., Kim, J. B., 2002. Institutional monitoring and opportunistic earnings management. *Journal of Corporate Finance* 8, 29–48.

DeAngelo, H., DeAngelo, L., Skinner, D., 1994. Accounting choice in troubled companies. *Journal of Accounting and Economics* 17, 113–143.

Dechow, P. M., Dichev, I. D., 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77, 35–59.

DeFond, M. L., Jiambalvo, J., 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17, 145–176.

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., Yang, Y. G., 2012. Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review* 87, 723–759.

Diamond, D., 1984. Financial intermediation and delegated monitoring. *Review of Economic Studies* 51, 393–414.

Dichev, I., Skinner, D., 2002. Large-sample evidence on the debt covenants hypothesis. *Journal of Accounting Research* 40, 1091–1123.

Fama, E., 1985. What's different about banks? *Journal of Monetary Economics* 15, 29–39.

Francis, J., LaFond, R., Olsson, P., Schipper, K., 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39, 295–327.

Healy, P. M., Palepu, K. G., 1990. Effectiveness of accounting-based dividend covenants. *Journal of Accounting and Economics* 12, 97–123.

Hope, O., 2003. Disclosure practices, enforcement of accounting standards and analysts' forecast accuracy: An international study. *Journal of Accounting Research* 41 (2), 235–272.

Jackson A. B., 2017. Discretionary accruals: Earnings management ... or not? *Abacus*, forthcoming.

Jaggi, B., Lee, P., 2002. Earnings management response to debt covenant violations and debt restructuring. *Journal of Accounting, Auditing & Finance* 17 (4), 295–324.

Jha, A., 2013. Earnings management around debt-covenant violations – An empirical investigation using a large sample of quarterly data. *Journal of Accounting, Auditing & Finance* 28, 369–396.

Jha, A., Shankar, S., Prakash A., 2015. Effect of bank monitoring on earnings management of the borrowing firm: An empirical investigation. *Journal of Financial Research* 38, 219–254.

Jones, J. J., 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29, 193–228.

Koh, P., 2007. Institutional investor type, earnings management and benchmark beaters. *Journal of Accounting and Public Policy* 26, 267–299.

Leuz, C., Nanda, D., Wysocki, P., 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics* 69 (3), 505–527.

Low, S., Glorfeld, L., Hearth, D., Rimbey, J. N., 2001. The link between bank monitoring and corproate dividend policy: The case of dividend omissions. *Journal of Banking and Finance* 25, 2069-2087.

Marshall, A., McCann, L., McColgan, P., 2014. Do banks really monitor? Evidence from CEO succession decisions. *Journal of Banking and Finance* 46, 118-131.

Matsumoto, D. A., 2002. Management's incentives to avoid negative earnings surprise. *The Accounting Review* 77 (3), 483–514.

Nikolaev, V., 2010. Debt covenants and accounting conservatism. *Journal of Accounting Research* 48, 137–175.

Nini, G., Smith, D., Sufi, A., 2009. Creditor control rights and firm investment policy. *Journal of Financial Economics* 92, 400–420.

Nini, G., Smith, D., Sufi, A., 2012. Creditor control rights, corporate governance, and firm value. *Review of Financial Studies* 25, 1713–1761.

Roberts, M. R., Sufi, A., 2009. Control rights and capital structure: An empirical investigation. *Journal of Finance* 64, 1657–1695.

Saunders, A., Song, K., 2018. Bank monitoring and CEO risk-taking incentives. *Journal of Banking and Finance 88*, 225-240.

Shan, Y., Taylor, S., Walter, T., 2009. Errors in estimating unexpected accruals in the presence of large change in net external financing. Working paper, University of Technology Sydney.

Stanley, B. W., Sharma, V. I., 2011. To cheat or not to cheat: How bank debt influences the decision to misreport. *Journal of Accounting, Auditing & Finance* 26, 383–414.

Sufi, A., 2007. Information asymmetry and financing arrangements: Evidence from syndicated loans. *Journal of Finance* 62, 629–668.

Sweeney, A. P., 1994. Debt-covenant violations and managers accounting responses. *Journal of Accounting and Economics* 17, 281–308.

Watts, R., 2003. Conservatism in accounting Part I: Explanations and implications. *Accounting Horizons* 17, 207–221.

Watts, R. L., Zimmerman, J. L., 1990. Positive accounting theory: A 10 year perspective. *The Accounting Review* 65, 131–156.

Yu, F., 2008. Analyst coverage and earnings management. *Journal of Financial Economics* 88, 245–271.

Table 1 Descriptive statistics

This table reports the descriptive statistics of the variables used in multivariate analyses. Borrowers are divided into two subsamples based on whether their loans have financial covenants or not. *ΔAQ* is the change in accrual quality which is measured by the R^2 from regressions of accruals on adjacent cash flows. We use accruals and cash flows in the eight quarters before and eight quarters after the loan initiation to estimate the regressions to obtain R^2 for the pre- and post-loan periods, and then calculate the changes in R^2 as *ΔAQ*. *FC* is an indicator variable taking a value of 1 if the loan contract contains financial covenants, and 0 otherwise. *FC_N* is the log of the sum of 1 and the number of financial covenants in the loan contract. *ΔSIZE* is the change in the log of total assets from the pre-loan period to the post-loan period. *ΔOPCYCLE* is the change in the log of the sum of the firm's days accounts receivable and days inventory from the pre-loan period to the post-loan period. *ΔSALESVOL* is the change in the standard deviation of sales scaled by total assets from the pre-loan period to the post-loan period. *ΔOCFVOL* is the change in the standard deviation of cash from operations scaled by ending total assets from the pre-loan period to the post-loan period. *ΔMB* is the change in the market-to-book ratio from the pre-loan period to the post-loan period. *ΔNegEarn* is the change in the percentage of quarters with accounting losses from the pre-loan period to the post-loan period. ***, ** and * indicate that the difference is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	Loans with financial covenants (N=3,517) (1)			Loans without financial covenants (N=3,590) (2)			Differences in	
Variables	Mean	Median	Std	Mean	Median	Std	Mean	Median
ΔAQ	0.001	0.000	0.349	-0.018	0.000	0.334	0.019 **	0.000
ΔSIZE	0.111	0.050	0.248	0.085	0.043	0.217	0.026 ***	0.007 ***
ΔOPCYCLE	-0.001	-0.002	0.254	0.002	0.000	0.255	-0.003	-0.002
ΔSALESVOL	-0.001	0.000	0.040	-0.003	-0.001	0.048	0.002	0.001 **
ΔOCFVOL	0.052	0.042	0.036	0.052	0.043	0.038	-0.000	-0.001
ΔMB	-0.045	0.001	0.971	-0.049	-0.009	0.950	0.004	0.010
ΔNegEarn	0.006	0.000	0.103	0.006	0.000	0.096	-0.000	-0.000

Table 2 Correlation coefficients

This table reports the Pearson correlation coefficients between the variables used in the multivariate analyses. Variables are defined in Table 1. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	ΔAQ	1.000							
(2)	FC	0.028**	1.000						
(3)	FC_N	0.026**	0.938***	1.000					
(4)	ΔSIZE	0.009	0.055***	0.089***	1.000				
(5)	ΔOPCYCLE	0.012	-0.006	-0.006	0.015	1.000			
(6)	ΔSALESVOL	0.010	0.013	0.016	-0.185***	-0.021*	1.000		
(7)	ΔOCFVOL	-0.040***	-0.006	-0.019	-0.123***	-0.029**	-0.011	1.000	
(8)	ΔMB	0.029**	0.003	-0.004	-0.102***	-0.010	0.059***	0.005	1.000
(9)	ΔNegEarn	-0.002	0.001	-0.005	-0.107***	-0.060***	0.053***	0.026**	0.007

Table 3 Effect of loan covenants on changes in accrual quality

This table reports the results from regressions estimating Equation 2 for the full sample. Dependent variables are changes in accrual quality. All the variables are defined in Table 1. In parentheses are p-values based on the standard errors adjusted for clustering effect at the borrower level. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	Dependent Variable = ΔAQ			
	(1)	(2)	(3)	(4)
Intercept	-0.354***	-0.003	-0.353***	0.004
	(0.000)	(0.793)	(0.000)	(0.720)
FC	0.026***	0.027***		
	(0.001)	(0.002)		
FC_N			0.018***	0.019***
			(0.002)	(0.004)
Δ*SIZE*		0.010		0.009
		(0.612)		(0.661)
Δ*OPCYCLE*		0.015		0.004
		(0.354)		(0.746)
Δ*SALESVOL*		0.076		0.072
		(0.401)		(0.427)
Δ*OCFVOL*		-0.429***		-0.425***
		(0.001)		(0.001)
Δ*MB*		0.010**		0.010**
		(0.018)		(0.017)
Δ*NegEarn*		0.004		0.003
		(0.927)		(0.945)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
N	9,949	7,107	9,949	7,107
R^2	0.008	0.015	0.008	0.015

Table 4 Effect of external monitoring

This table reports the results from regressions estimating Equation 2 for subsamples. Models 1 and 2 use subsamples partitioned based on the median institutional ownership, while Models 3 and 4 use subsamples partitioned based on the median number of analysts following. Dependent variables are changes in accrual quality. All the variables are defined in Table 1. In parentheses are p-values based on the standard errors adjusted for clustering effect at the borrower level. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	Institutional ownership		Analysts following	
	Low	High	Low	High
	(1)	(2)	(3)	(4)
Intercept	-0.301***	-0.120**	-0.010	-0.107***
	(0.000)	(0.041)	(0.782)	(0.009)
FC	0.033**	0.004	0.043***	0.013
	(0.035)	(0.801)	(0.002)	(0.288)
Δ*SIZE*	0.011	0.084**	-0.032	0.065**
	(0.757)	(0.041)	(0.192)	(0.036)
Δ*OPCYCLE*	0.050*	-0.004	0.020	0.014
	(0.058)	(0.906)	(0.346)	(0.561)
Δ*SALESVOL*	0.073	0.167	0.009	0.255
	(0.475)	(0.532)	(0.926)	(0.317)
Δ*OCFVOL*	-0.492**	-0.464*	-0.360**	-0.452**
	(0.017)	(0.079)	(0.025)	(0.023)
Δ*MB*	0.015*	0.012	0.005	0.014**
	(0.052)	(0.137)	(0.442)	(0.030)
Δ*NegEarn*	0.014	0.121	-0.033	0.057
	(0.841)	(0.180)	(0.594)	(0.401)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
N	2,393	2,550	3,264	3,843
R^2	0.035	0.026	0.031	0.022

Table 5 Effect of loan structure

This table reports the results from regressions estimating Equation 2 for subsamples partitioned based on the median of the proportion of loans held by the lead bank in the loan syndicate. Dependent variables are changes in accrual quality. All the variables are defined in Table 1. In parentheses are p-values based on the standard errors adjusted for clustering effect at the borrower level. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	Lead Banks' Shares	
	Small	Large
	(1)	(2)
Intercept	0.014	0.002
	(0.813)	(0.978)
FC	0.044*	0.079***
	(0.071)	(0.001)
ΔSIZE	0.090*	-0.048
	(0.066)	(0.223)
ΔOPCYCLE	0.032	-0.006
	(0.379)	(0.841)
ΔSALESVOL	0.248	0.229
	(0.471)	(0.122)
ΔOCFVOL	-0.515*	-0.437*
	(0.097)	(0.053)
ΔMB	0.004	0.013
	(0.710)	(0.161)
ΔNegEarn	0.021	-0.023
	(0.850)	(0.810)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	1,704	1,460
R^2	0.042	0.061

Table 6 Effect of loan covenants on analysts' information environment

This table reports the results from regressions examining the effect of financial covenants on analysts' information environment. *ΔAccuracy* is the change in the average forecast accuracy, defined as -1 times the absolute value of the difference between actual and forecast earnings per share deflated by share prices at the beginning of the quarter, from the pre-loan period to the post-loan period. *ΔDispersion* is the change in the standard deviation of analyst forecasts from the pre-loan period to the post-loan period. *Δh* and *Δs* are the changes in the precision of analysts' common and private information, respectively, from the pre-loan period to the post-loan period. The precision is estimated using the method in Barron et al. (1998). Δ*Analysts* is the change in the number of analysts following from the pre-loan period to the post-loan period. *ΔVarEarn* is the change in the standard deviation of earnings per share from the pre-loan period to the post-loan period. Δ*SIZE* is the change in the log of total assets from the pre-loan period to the post-loan period. Δ*MB* is the change in the market-to-book ratio from the pre-loan period to the post-loan period. Δ*Horizon* is the change in the number of days between median forecast date and earnings announcement date. *Loss* is an indicator variable equal to 1 for firms reporting accounting losses, and 0 otherwise. Δ*Surprise* is the change in earnings surprise, calculated as the absolute difference between forecast and actual earnings per share scaled by stock price, from the pre-loan period to the post-loan period. Δ*ROA* is the change in the ratio of net income to total assets, from the pre-loan period to the post-loan period. In parentheses are p-values based on the standard errors adjusted for clustering effect at the borrower level. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	ΔAccuracy (1)	*ΔDispersion* (2)	*Δh* (3)	*Δs* (4)
Intercept	-0.114***	-0.003	-25.352***	-7.218
	(0.001)	(0.772)	(0.000)	(0.270)
FC	0.067***	-0.015**	6.697***	8.515*
	(0.009)	(0.025)	(0.004)	(0.089)
Δ*Analysts*	0.160***	-0.011	-2.462	-15.653***
	(0.000)	(0.114)	(0.319)	(0.002)
Δ*SIZE*	0.040	0.041**	-37.903***	-47.642***
	(0.631)	(0.048)	(0.000)	(0.000)
Δ*VarEarn*	-0.381***	0.087***	-2.932	-3.641
	(0.000)	(0.000)	(0.256)	(0.550)
Δ*MB*	0.017***	-0.004**		
	(0.004)	(0.011)		
Δ*Horizon*	0.001	0.000***		
	(0.408)	(0.008)		
Loss	-0.895***	0.179***		
	(0.000)	(0.000)		
Δ*Surprise*		8.898***	-18.239	-275.334***
		(0.000)	(0.628)	(0.002)
Δ*Dispersion*			15.632	-215.797
			(0.889)	(0.462)
Δ*ROA*			39.970	74.957
			(0.149)	(0.275)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
N	12,951	12,152	12,010	12,010
R^2	0.082	0.116	0.018	0.012

Table 7 Robustness tests

This table reports the results from robustness tests. In Models 1 and 2, we control for loan terms. In Model 3, we exclude loans of the same borrowers in the eight quarters before and eight quarters after the initiation of current loans. In Model 4, we use an alternative measure of accrual quality, based on the association between current accruals and future return on assets. *GC* is an indicator variable equal to 1 if the loan contract contains general covenants. *Amount* is the log of the total loan amount. *Security* is an indicator variable equal to 1 if the loan requires collateral, and 0 otherwise. *Maturity* is the log of months before the loan matures. Other variables are defined in Table 1. In parentheses are p-values based on the standard errors adjusted for clustering effect at the borrower level. ***, ** and * indicate that the coefficient is statistically significant at the 1%, 5% or 10% level based on two-tailed tests.

	Controlling for loan terms		Excluding same borrowers' loans in adjacent 16 quarters	Using alternative measure of AQ
	(1)	(2)	(3)	(4)
Intercept	-0.016	-0.014	-0.330***	-0.230
	(0.774)	(0.805)	(0.000)	(0.393)
FC	0.032**		0.029**	0.165*
	(0.021)		(0.046)	(0.086)
FC_N		0.022**		
		(0.016)		
GC	0.004	0.004		
	(0.780)	(0.657)		
Amount	0.002	0.002		
	(0.446)	(0.456)		
Security	-0.004	-0.005		
	(0.708)	(0.602)		
Maturity	-0.000*	-0.000**		
	(0.055)	(0.048)		
Δ*SIZE*	0.003	0.001	0.027	-0.058
	(0.874)	(0.970)	(0.543)	(0.867)
Δ*OPCYCLE*	0.009	0.002	0.037	-0.161
	(0.607)	(0.893)	(0.273)	(0.191)
Δ*SALESVOL*	0.042	0.039	0.019	0.393
	(0.638)	(0.667)	(0.852)	(0.786)
Δ*OCFVOL*	-0.429***	-0.417***	-0.485**	0.653
	(0.001)	(0.002)	(0.037)	(0.689)
Δ*MB*	0.011**	0.011**	0.015**	0.013**
	(0.018)	(0.017)	(0.036)	(0.013)
Δ*NegEarn*	-0.009	-0.010	-0.003	-0.395
	(0.854)	(0.840)	(0.964)	(0.358)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
N	6,545	6,545	2,887	15,833
R^2	0.014	0.013	0.025	0.001